



Serial No. 09/574,987; Navy Case No. 82408

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on 31 JANUARY, 2003

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by

Rhea J. McGehee  
Signature of Depositor

RHEA J. MCGEHEE

Typed or printed name of Depositor

In re application of:  
Carol A. Becker  
Filed: 12 May 2000  
Serial Number: 09/574,987

Examiner: Tran, T.  
Art Unit: 1711

A division of parent:  
Filed: 20 August 1998  
Serial Number: 09/137,008  
United States Patent Number 6,143,138  
Issued: 7 November 2000

For: VISIBLE LIGHT pH CHANGE FOR ACTIVATING POLYMERS AND OTHER pH DEPENDENT REACTANTS

RESPONSE UNDER 37 CFR 1.111

Hon. Commissioner of Patents and Trademarks  
Washington, DC 20231

Sir:

In response to the Office Action of 5 December 2002, the following is submitted.

Remarks

Applicant hereby respectfully requests reconsideration and reexamination of the above-

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identified application.

In the above-cited Office Action, all of pending claims 7-13, 27-35 and 37 have been rejected. Claims 7-13 and 27-33 would be allowable if rewritten to overcome the 35USC112, second paragraph, rejection as set forth in the Office Action. Claims 7-13, 27-35 and 37 remain in the application.

**Patent Office Rejection of Claims 7-13, 27-35 and 37 under 35 USC 112**

The Examiner states that the rejected claims are indefinite under 35 USC 112, second paragraph, due to the improper use of the word "disposed". The Examiner indicates that the word "disposed" is defined in the *American Heritage Dictionary* as "arranged in a particular order". The Examiner asserts that there appears to be no particular order required by the specification.

**Applicant's Response to 35 USC 112 Rejection**

Applicant traverses these rejections for the following reasons. Applicant appreciates the Examiner's attention to detail and does not disagree with the Examiner as to the definition of the word "disposed", as cited from *the American Heritage Dictionary*.

The Applicant does however assert that use of this word is appropriate and not improper. While Applicant has not indicated in the specification that a particular order or arrangement is required, such details are not required based upon this following reasoning:

a particular order may exist even though one does not know or care to know its particulars.

Applicant asks that she be allowed to demonstrate this by way of example. For example, one moves into a new house and the house has a vacant closet (hopefully). One could take a pair of shoes and insert them into the closet and place them on the floor of the closet so that the right

shoe is on the right and the left shoe is on the left and the shoes are placed next to each other. Certainly these shoes are disposed within the closet and certainly they are arranged in a particular order".

Alternatively, the shoes could just be thrown into the closet and fall where they may. One shoe may land upside down and the other may land right-side up. Never-the-less, the shoes are still disposed in the closet. They are indeed arranged in a particular order, albeit one where one shoe is right-side up and the of other is turned over. One may not know or even care to know how the shoes fell within the closet, just that they did fall within the closet.

In Applicant's immediate case, for example claim 7, it is possible to have a "polymer disposed in a solution" wherein there is no need to describe a particular order or arrangement of the polymer in the solution. It is simply placed in "some" order. Never-the-less the polymer can be disposed in the solution. Much like the shoes disposed within the closet, they can be carefully placed in the closet or can be tossed in. In either way they are just the same disposed within the closet.

Had Applicant considered that the "specifics" of a specific order or arrangement be essential, then this would have been disclosed, and claimed if necessary to distinguish from the prior art (or for 35 USC 112 reasons). Such information is not required however to carry out this invention, distinguish over the prior art, nor to distinctly claim or particularly point out the invention.

It is similar for claims 34 and 37, wherein a polyelectrolyte fiber is disposed in a solution and an acrylamide gel is disposed in a solution, respectively. In these cases, use of the word

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"disposed" is considered proper by the Applicant. Accordingly, Applicant respectfully requests that the 35 USC 112, second paragraph, rejection be withdrawn.

**Patent Office Rejection of Claim 34 under 35 USC 102(b) based upon Amatore et al. or Hoffman**

Regarding claim 34, the Examiner asserts that Amatore teaches a solution containing protonated anthracene and a polyelectrolyte fiber (aromatic hydrocarbons). The abstract is provided. It is further indicated that Hoffman teaches a solution containing protonated anthracene and a polyelectrolyte. The abstract of this publication is also provided..

**Applicants' Response to the Patent Office Rejections under 35 USC 102 over Amatore or Hoffman**

Applicant traverses these rejections and will first address the rejection based upon Amatore and second the rejection based upon Hoffman.

Regarding the rejection of claim 34 based upon Amatore, it is assumed that the Examiner meant to refer to the anthracene as the aromatic hydrocarbons verses the polyelectrolyte fiber as the aromatic hydrocarbons.

A careful reading of the Amatore abstract indicates that there is no reference to use of a polyelectrolyte fiber as is disclosed and claimed by Applicant in claim 34.

It is well established U.S. patent law that for a reference to anticipate a claimed invention, it must show each and every element of the invention as claimed. The lack of a polyelectrolyte fiber in Amatore makes the use of Amatore as a 35USC102 reference improper. Withdrawal of this reference is therefore requested.

Regarding the rejection of claim 34 based upon Hoffman, Applicant asserts the same assertion as above with regard to Amatore. Applicant finds no teaching in Hoffman, explicit or

inherent, that describes the use of a polyelectrolyte fiber. Hoffman refers to the use of an electrolyte, but not a polyelectrolyte fiber.

The lack of a polyelectrolyte fiber in Hoffman makes the use of Hoffman as a 35USC102 reference improper. Withdrawal of this reference is therefore requested.

**Patent Office Rejection of Claims 34 and 37 under 35 USC 102(b) based upon Hargreaves**

Regarding the rejected claims, the Examiner asserts that Hargreaves teaches a solution containing protonated anthracene and a polymer from acrylamide fluorescein isocyanate, vinylpyrrolidone copolymer. The abstract is provided.

**Applicants' Response to the Patent Office Rejections under 35 USC 102 over Hargreaves**

Applicant traverses these rejections and will first address the rejection of claim 34 and secondly address the rejection of claim 37.

Regarding the rejection of claim 34, there is no indication that Hargreaves teaches using protonated anthracene as has been claimed by the Applicant. In fact the indication is that Hargreaves does not use protonated anthracene. This is apparent by the Hargreaves' abstract indicating that when the copolymer prepared from 1-Vinyl-2-Pyrrolidinone and anthracene was exposed to light a fluorescent decay occurred.

Applicant has shown that illuminating the protonated form of anthracene with visible light results in a phosphorescent decay, not a fluorescent decay. In fact Applicant focused her research on achieving phosphorescent decay that would allow heat generated by the visible light illumination to be effectively dispersed and that would permit an efficient, long-lasting, pH change to be made possible. See the Specification at page 7, lines 14-21 and page 8, lines 1-3. Protonated anthracene avoids fluorescence, the copolymer prepared from 1-Vinyl-2-

Pyrrolidinone and anthracene does not.

In addition, there is no indication in Hargreaves that a pyrolytic fiber is disclosed.

Regarding the rejection of claim 37, as with claim 34, there is no indication that Hargreaves teaches using protonated anthracene as has been claimed by the Applicant. Applicants anthracene comments above corresponding to the rejection of claim 34 under Hargreaves apply equally here.

In addition, there is no indication that Hargreaves employs/teaches the use of an acrylamide gel. Hargreaves develops thiourea  $\text{NH}_2\text{CSNH}_2$  from acrylamide and fluorescein, but he does not use the acrylamide directly as Applicant has claimed.

These substantial differences compel the removal of Hargreaves as a 35USC102 reference in the rejection of claims 34 and 37. Hargreaves fails to teach, explicitly or implicitly, essential elements of Applicant's claimed invention. As it is essential that a reference disclose each and every element of a claimed invention in order for the reference to anticipate, Hargreaves has failed to anticipate. Accordingly, removal of the rejection based upon Hargreaves is requested.

**Patent Office Rejection of Claim 35 under 35 USC 103(a) based upon Amatore, Hoffman, or Hargreaves as applied to claim 34 above and further in view of Zirino**

The Examiner states that none of the references of Amatore, Hoffman and Hargreaves teach a polyacrylic acid-polyvinyl alcohol (PAA-PVA) polymer in a solution. The Examiner states that Zirino teaches a solution containing a polyacrylic fiber which is PAA-PVA and that Zirino further teaches that the PAA-PVA has good selective and light actuation powering which in turn will respond better to pH changes. The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the polyelectrolyte fiber, as taught by Zirino, for the polymer of Amatore, Hoffman and Hargreaves.

**Applicants' Response to the Patent Office Rejections under 35 USC 103**

Applicant traverses these rejections. As stated previously, Hargreaves does not teach the use of protonated anthracene, only Amatore and Hoffman appear to do this. There is no suggestion within either Amatore nor within Hoffman that the anthracene of their teaching be combined with PAA-PVA.

If such suggestion exists, Applicant asserts that it will have to come from the Zirino reference.

While it can be respected that Zirino had the foresight to envision that any of a variety of "pH dependent dyes", as he calls them, could be chosen for use with his invention, he did not have the foresight to appreciate the positive attributes of using protonated anthracene with an expandable and contractible polymer as described and claimed by the Applicant.

The Examiner indicates that it would be obvious to one of ordinary skill in the art to select the anthracene of Amatore, Hoffman or Hargreaves to be used in Zirino.

Applicant must traverse this reasoning. As stated earlier, Applicant finds no reference in the teaching of Hargreaves that lead to the use of protonated anthracene. Regarding Amatore and Hoffman, there is no teaching in either of these references of the attributes of protonated anthracene when illuminated with visible light.

There is no teaching within any of these references of the advantages of using protonated anthracene with PVA-PAA. While it can be surmised that Zirino would desire to find an efficient mechanism for causing the expansion and contraction of PVA-PAA, there is nothing within Amatore, Hoffman and Hargreaves that would lead him to this. The closest possibility is

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Hargreaves' work on causing a non-protonated anthracene to fluoresce.


As pointed out in her specification, the Applicant was looking for a mechanism other than short-lived fluorescence to allow for the efficient expansion and contraction of PVA-PAA, see the Specification at page 5, lines 16-21 and page 6, lines 1-3.

As Applicant can find no suggestion or teaching in the cited references to arrive at the invention as claimed by Applicant in claim 35, Applicant asserts that a prima facie case of obviousness has not been made out. Accordingly, withdrawal of this rejection is respectfully requested.

Any inquiry concerning this case should be directed to Applicants' attorney, Mr. Peter Lipovsky at (619) 553-3824.

Respectfully submitted,

by



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<b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)	Application Number	09/574,987
	Filing Date	05/12/2000
	First Named Inventor	Carol A. Becker
	Group Art Unit	1711
	Examiner Name	Thao T. Tran
Total Number of Pages in This Submission	Attorney Docket Number	82408

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
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Signature	<i>Peter A. Lipovsky</i>
Date	30 JAN 03

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